

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A data recording head for use in conjunction with a data recording medium, comprising:

a body;

a first waveguide supported by the body; and

a second waveguide supported by the body and energy-coupled to the first waveguide,

wherein the first waveguide and the second waveguide are separated by a space spaeing,

wherein the first waveguide has a first side having a first width and the second waveguide has a second side having a second width, the first width and the second width being measured in a direction of the space between the first waveguide and the second waveguide, ~~and~~

wherein the first width is larger than the second width,

wherein the first waveguide is configured to receive a propagated radiant energy directed from a source towards the first side, and

wherein the second waveguide is adjacent to the first waveguide such that the space between the first waveguide and the second waveguide is not aligned with the propagated radiant energy from the source.

2. (Canceled)

3. (Currently Amended) The recording head of claim 1 ~~[[2]]~~, wherein the first waveguide is configured to end fire couple ~~[[to]]~~ the propagated ~~input~~ radiant energy.

4. (Currently Amended) The recording head of claim 3, wherein the propagated input radiant energy corresponds to a first spot size, and the ~~first waveguide has a first width that is sized to substantially correspond to the first spot size, and wherein the second waveguide is configured to output radiant energy from the data recording head that corresponds to a second spot size.~~

5. (Canceled)

6. (Previously Presented) The recording head of claim 1 wherein the first waveguide corresponds to an input spot size and the second waveguide corresponds to an output spot size, wherein the input spot size is larger than the output spot size.

7. (Currently Amended) The recording head of claim 1 ~~[[2]]~~, wherein the propagated input radiant energy is optically coupled from the first waveguide to the second waveguide across the space between the first waveguide and second waveguide.

8. (Original) The recording head of claim 1, further comprising an index matching layer between the first and second waveguides for facilitating mode index matching between the first and second waveguides.

9. (Currently Amended) The recording head of claim 8, wherein the index matching layer comprises ~~includes at least one of~~ a cladding layer in the space between the first waveguide and the second waveguide and a diffraction grating.

10. (Original) The recording head of claim 1, wherein the second waveguide comprises a solid immersion optical element that is configured to focus radiant energy as an output.

11. (Canceled)

12. (Currently Amended) A data storage system, comprising:

a data recording medium;

a radiant energy source;

a data recording head, comprising:

a body,

a first waveguide supported by the body and coupled to receive a propagated radiant energy from the radiant energy source, and

a second waveguide supported by the body and energy-coupled with the first waveguide, the second waveguide directing radiant energy to the data recording medium,

wherein the first waveguide and the second waveguide are separated by a space spaeing,

wherein the first waveguide has a first side having a first width and the second waveguide has a second side having a second width, the first width and the second width being measured in a direction of the space between the first waveguide and the second waveguide, ~~and wherein the first width is larger than the second width,~~

wherein the first waveguide is configured to receive the propagated radiant energy directed from the radiant energy source towards the first side, and

wherein the second waveguide is adjacent to the first waveguide such that the space between the first waveguide and the second waveguide is not aligned with the propagated radiant energy from the radiant energy source; and

an actuator supporting and positioning the data recording head with respect to the data recording medium to effect data recording.

13. (Currently Amended) The system of claim 12, wherein the first waveguide is configured to end fire couple with the propagated ~~input~~ radiant energy.

14. (Currently Amended) The system of claim 13, wherein the radiant energy source produces the propagated ~~input~~ radiant energy corresponding to a first spot size, wherein the second waveguide is configured to direct output radiant energy having a second spot size, which is smaller than the first spot size.

15. (Original) The system of claim 12, wherein the data recording head further comprises at least one of a cladding layer and a diffraction grating between the first and second waveguides.

16. (Original) The system of claim 12, wherein the data recording head further comprises a solid immersion optical element that is configured to focus radiant energy onto the data recording medium.

17. (Original) The system of claim 12, wherein the data recording medium includes a magnetic data recording medium and wherein the data recording head further comprises a write element to effect magnetic data recording on the magnetic data recording medium, wherein the first and second waveguides are configured relative to the write element and the data recording head is supported and positioned by the actuator relative to the data recording medium to effect heat assisted magnetic recording.

18. (Currently Amended) A method of data recording, comprising the steps of:

providing a radiant energy source;

providing a data recording head comprising a first waveguide coupled to the radiant energy source, and a second waveguide energy-coupled to the first waveguide and configured to direct radiant energy to a data recording medium;

wherein the first waveguide and the second waveguide are separated by a space spaceing,

wherein the first waveguide has a first side having a first width and the second waveguide has a second side having a second width, the first width and the second width being measured in a direction of the space between the first waveguide and the second waveguide, and

wherein the first width is larger than the second width,

wherein the first waveguide is configured to receive a propagated radiant energy directed from the radiant energy source towards the first side, and

wherein the second waveguide is adjacent to the first waveguide such that the space between the first waveguide and the second waveguide is not aligned with the propagated radiant energy from the radiant energy source;

directing radiant energy ~~at a spot~~ on the data recording medium; and

recording data at a ~~[[the]]~~ spot where radiant energy has been directed.

19. (Currently Amended) The method of claim 18, wherein the radiant energy source produces the propagated input ~~input~~ radiant energy corresponding to a first spot size, wherein the second waveguide is configured to direct output radiant energy having a second spot size, which is smaller than the first spot size.

20. (Canceled)

21. (New) The recording head of claim 8, wherein the index matching layer comprises a diffraction grating in the space between the first waveguide and the second waveguide.

22. (New) The recording head of claim 1, wherein the first waveguide comprises SiO_x and the second waveguide comprises Ta_2O_5 .

23. (New) The recording head of claim 1, wherein the first waveguide and the second waveguide both overlap a plane that is substantially parallel to the first side and the second side, wherein the plane is substantially perpendicular to a plane in the direction of the propagated radiant energy.

24. (New) The recording head of claim 1, wherein the first waveguide and the second waveguide overlap each other by an interactive length, wherein the interactive length is less than an entire length of either the first waveguide or the second waveguide.